

Patent Application
ATM-515 (7486)

REMARKS

Rejections of Claims and Traversal Thereof

In the May 25, 2005 Office Action,

claims 10 and 18-19 were rejected under 35 U.S.C. §112, second paragraph;

claims 1, 3-7, 9-17 were rejected under 35 U.S.C. §103(a) as being unpatentable over McEntee, et al. (U.S. Patent No. 4,127,598, hereinafter McEntee) and Tsukuno, et al. (U.S. Patent No. 5,312,947, hereinafter Tsukuno).

These rejections are hereby traversed, and reconsideration of the patentability of herein amended claims is requested, in light of the ensuing remarks.

Rejection under 35 U.S.C. §112, second paragraph

Applicants amended all of these claims in the last submitted response but because the strike through of the "less than" symbol (<) was not visible, applicants are amending again herein. Claim 10 was rejected but applicants are not sure that there is still a problem with the claim. Applicants believe that all rejections have been addressed and request that the rejections be withdrawn.

Rejection under 35 U.S.C. §103(a)

In the May 25, 2005 Office Action, claims 1, 3-7, 9-17 were rejected under 35 U.S.C. §103(a) as being unpatentable over McEntee and Tsukuno. Applicants submit that these cited references either alone or in combination do not render the presently claimed invention as obvious.

Initially, it should be noted that applicants have amended the claims to recite that the at least one adsorbent bed material has an affinity for water and impurities. McEntee does not teach or suggest such an adsorbent bed material. Instead, McEntee teaches an adsorbent material that has the ability to allow the passage of impure silanes and siloxanes having a viscosity of below 100,000 centipoises at 25°C, and more preferably at 25,000 centipoises (see column 5, lines 37-38). The conversion of 100,000 centipoises into different units is as follows:

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100,000 centipoises

1000	<u>dyn-s/cm²</u>	<u>dyne second per square centimeter</u>
1.01972	<u>gf-s/cm²</u>	<u>gram force second per square centimeter</u>
1000	<u>g/cm-s</u>	<u>gram per centimeter per second</u>
10.1972	<u>kgf-s/m²</u>	<u>kilogram force second per square meter</u>
100	<u>kg/m-s</u>	<u>kilogram per meter per second</u>
100	<u>N-s/m²</u>	<u>newton second per square meter</u>
100	<u>Pa-s</u>	<u>pascal second</u>
1000	<u>P, Po</u>	<u>poise</u>
100		<u>poiseuille</u>
2.08854	<u>lbf-s/ft²</u>	<u>pound force second per square foot</u>
67.1969	<u>lbm/ft-s</u>	<u>pound mass per foot second</u>
5.59974	<u>lbm/in-s</u>	<u>pound mass per inch second</u>
1.45038×10 ⁻²	<u>reyns (reyn)</u>	<u>reynolds (reyns)</u>
2.08854	<u>slug/ft-s</u>	<u>slug per foot second</u>
0.174045	<u>slug/in-s</u>	<u>slug per inch second</u>

Water has a viscosity at 25°C as follows:

Dynamic and Kinematic Viscosity of Water in SI Units:

Temperature - <i>t</i> (°C)	Dynamic Viscosity μ 10 ⁻³ (N.s/m ²)	Kinematic Viscosity - ν 10 ⁻⁶ (m ² /s)
0	1.787	1.787
5	1.519	1.519
10	1.307	1.307
20	1.002	1.004
30	0.798	0.801
40	0.653	0.658
50	0.547	0.553
60	0.467	0.475
70	0.404	0.413
80	0.355	0.365
90	0.315	0.326
100	0.282	0.294

Comparison

Clearly the adsorbent material of McEntee that allows silanes and siloxanes with this low viscosity will also allow the passage of water because, as shown above, water at 25° C has a viscosity lower than the silanes and siloxanes, and as such, the adsorbent material does not and will not remove or capture water

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from the impure silanes or siloxanes. The examples in McEntee indicate the usage of a 12 X 40 mesh which is exactly the same type of mesh used in water purification and chosen for water purification because it captures impurities while allowing water to freely pass therethrough. Further, as stated in McEntee, the mesh can be from about 4000 to ¼ inch and this mesh is considered to be quite large and certainly not used in the capture of water molecules.

US Standard Mesh Size	Inches	Millimeters	Microns
4	.187	4.75	4750
5	.157	4.00	4000
6	.132	3.35	3350
7	.111	2.80	2800
8	.0937	2.36	2360
10	.0787	2.00	2000
12	.0661	1.70	1700
14	.0555	1.40	1400
16	.0469	1.18	1180
18	.0394	1.00	1000
20	.0331	.85	850
25	.0278	.71	710
30	.0234	.60	600
35	.0197	.500	500
40	.0165	.425	425
45	.0139	.355	355
50	.0117	.300	300
60	.0098	.250	250
70	.0083	.212	212
80	.0070	.180	180
100	.0059	.150	150
120	.0049	.125	125
140	.0041	.106	106
170	.0035	.090	90
200	.0029	.075	75
230	.0025	.063	63
270	.0021	.053	53
325	.0017	.045	45

Instead, the carbon material chosen by McEntee has affinity for hydrocarbons and the water with a similar and/or lower viscosity as the silanes or siloxanes is passed through the adsorbent material.

According to the Office, Tsukuno, which teaches the use of sodium sulfate can be combined with McEntee to overcome the shortcomings of McEntee. Applicants vigorously disagree for the following reasons.

It should be noted that it is incumbent on the Office to view applicants' claimed invention as a whole. *In re Wesslau*, 174 U.S.P.Q. 393 (CCPA 1965). Certain individual features from the references may not be

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arbitrarily chosen (while equally arbitrarily discarding other disclosed features) to merely lump together disparate features of different references as a mosaic in an attempt to meet the features of the rejected claims. Thus, the Office is not allowed to pick and choose just certain parts of different references and combine them, but instead, the references in their entirety must be considered. As such, the teachings of Tsukuno must be viewed in their entirety.

The text that discusses the use of sodium sulfate to remove water must be read in view of the text as written therebefore. Specifically, the method for removing ionic crystals discussed at the end of column 1 into column 2 of Tsukuno describes adding at least 10% of water and agitating the mixture. This mixture is then allowed to rest and separate to form a liquid-liquid separation mixture with the intention that the water layer contains the ionic crystals. Tsukuno states further that it is very difficult to get a good separation between the water and siloxane and the separation is usually incomplete. As such, an additional agent is included, that being, treating the water containing the ionic crystal with a drying agent, such as sodium sulfate. However, it is clearly stated by Tsukuno that this method is not effective. As such, why would one attempting to remove water from a cyclosiloxane precursor look to a method that first adds water and then is forced to try to remove it. Clearly one would not.

Further, why would one skilled in the art look to combine a method that adds water and then attempts to separate same by liquid-liquid (oil-water separation) and then possibly has to use a drying agent (Tsukuno) with a method that uses an adsorbent material that allows water to pass therethrough because of similar viscosity between water and silanes/siloxanes. There is no suggestion or motivation to make such a combination and applicants point out that obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination and suggesting the desirability of the combination. Applicants respectfully submit that the Office's statement that "the claimed invention would be obvious to one having ordinary skill in the art" is not sufficient by itself to establish *prima facie* obviousness. According to the Board in *Ex parte Obukowicz*, 27 U.S.P.Q. 2d 1063, 1065 (B.P.A.I. 1992):

"In proceedings before the Patent and Trademark Office, the examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art...The examiner can satisfy this burden only by showing some **objective** (emphasis added) teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teaching of the references."

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See also *Ex parte Humphreys*, 24 U.S.P.Q. 2D 1255, 1262 (B.P.A.I. 1992) where the Board addressed this very issue and determined the Office was wrong in rejecting the claims for obviousness because the examiner's rejection was not **specific** as to how one of ordinary skill in the art would have found it obvious to combine the references. Furthermore, the Board noted the examiner had not explained with any **specificity what areas of the references would suggest the combination**. This is the circumstance here. The Office has not identified any objective or specific motivation or suggestion in the cited references that would motivate one skilled in the art to combine the references.

Thus, the Office seems to be merely reinterpreting the prior art in light of applicant's disclosure, in order to reconstruct applicant's claimed invention, but without any instructional or motivating basis in the references themselves. Such approach is improper and legally insufficient to establish any *prima facie* case of obviousness.

Further, the proposed combination fails to recognize the advantages of the presently claimed invention. For example, where in any of the references is there a suggestion to treat the cyclosiloxane for a sufficient time to reduce the water content and that this reduction reduces premature polymerization in the delivery process? Clearly, heretofore it was unknown that the water caused a premature polymerization of the cyclosiloxane precursor in the process of delivering same to the CVD unit. How, would one go about modifying either reference or the combination of same to recreate applicants' claimed invention when it was heretofore unknown that water caused premature polymerization? That which is unknown cannot be obvious. Clearly, none of the references cited by the Examiner even contemplates the premature polymerization problem associated with chemical vapor deposition of cyclosiloxane precursors, much less than recognizing presence of water, basic and/or acidic impurities therein as the source of such premature polymerization problem. Hence, obviousness cannot be predicated on what is not known at the time an invention is made, even if the inherency of a certain feature is later established. *In re Rijckaert*, 28 USPQ2d 1955 (Fed. Cir. 1993).

For these reasons, the Office has not met its burden of establishing a *prima facie* case of obviousness. The applicants therefore request that the rejection of claims 1, 3-7 and 10-17 on the basis of obviousness be withdrawn.

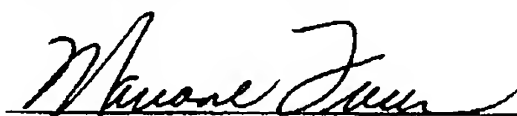
Conclusion

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Applicants have satisfied the requirements for patentability. All pending claims are free of the art and fully comply with the requirements of 35 U.S.C. §112. It therefore is requested that Examiner Manoharan reconsider the patentability of all pending claims in light of the distinguishing remarks herein, and withdraw all rejections, thereby placing the application in condition for allowance. Notice of the same is earnestly solicited. In the event that any issues remain, Examiner Manoharan is requested to contact the undersigned attorney at (919) 419-9350 to resolve same.

The Office is hereby authorized to charge any additional fees determined to be properly payable for entry of this Response, to Deposit Account 50-0860 of Advanced Technology Materials, Inc.

Respectfully submitted,



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